

REMARKS

I. Status of the Application

Claims 1-55 are pending in this application. Claims 4-15, 18, 25-26, 31, 45-47 have been withdrawn as directed to non-elected species. The Examiner has objected to claims 22 and 23. The Examiner has rejected the following claims under 35 USC § 103(a): 1-3, 16, 17, 19-21, 24, 27-30, 32-44 and 48-55. Applicants respectfully request reconsideration of the application in view of the amended claims and the following remarks, which are intended to place this case in condition for allowance.

II. Claim Objections

The Examiner has objected to claims 22 and 23 stating “Applicant’s remarks with respect to claims 22 and 23 are found persuasive, in that none of the prior art references teach or suggest using two independent electroanalytical responses in combination in step (c) of claim 1.”

The Examiner stated that “Claims 22 and 23 are objected to as being dependent upon rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim.” Applicants gratefully acknowledge the Examiner’s reasons for the indication of allowable subject matter: “The prior art does not teach or suggest the “gluing” approach described by Applicant, and used in the process of claims 22 and 23, because the prior art teaches using a single voltammetric method for monitoring the composition. It is noted that claim 23 does require multiple electroanalytical responses as evidenced by the “s” at the end of “responses”.”

Accordingly, Applicants have amended claim 22 into independent form to

include the subject matter of claim 1. Thus, claim 22 should be allowable. Instead of amending claim 23 to include the subject matter of claim 1, Applicants have instead amended claim 1 to include the subject matter of claim 23, and have canceled claim 23. Thus, claim 1, and all of the claims that depend therefrom, should now be allowable. For at least these reasons, Applicants respectfully request withdrawal of the objections and allowance of at least claims 1 and 22.

III. Claim Rejections - 35 USC § 103(a)

Claims 1-3, 16, 17, 19-24, and 53 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Richards et al. “Optimisation of a neural network model for calibration of voltammetric data,” in view of US 6,365,033 to Graham et al. (hereinafter “Graham”), with evidence of the level of ordinary skill from Richards, et al. “Multivariate Analysis in Electroanalytical Chemistry.” For at least the reasons set forth below, this rejection is respectfully traversed.

Claims 27-44, 48, 49, 54, and 55 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Richards et al. “Optimisation of a neural network model for calibration of voltammetric data,” in view of Graham as applied above to claim 1, and further in view of Applicant’s admission of prior art. For at least the reasons set forth below, this rejection is respectfully traversed.

Claims 50-52 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Richards et al. “Optimisation of a neural network model for calibration of voltammetric data,” in view of Graham and Applicant’s admission of prior art as applied to claim 27, and further in view of Schneider “Cross Validation,” February 1997, <http://www.cs.cmu.edu/~schneide/tut5/node42.html>. For at least the reasons set forth below, this rejection is respectfully traversed.

Applicants have amended independent claims 1, 27, 53, and 54 to include the subject matter of claim 23. Applicants have also withdrawn claims 36 and 37 to avoid redundancy. Support for these amendments can be found in the Summary of the Invention of the application as filed, from page 13, last paragraph to page 14, second paragraph:

The present invention relates to application of numerous chemometric techniques of design of experiment (DOE), modeling power, outlier detection, regression and calibration transfer for analysis of voltammetric responses obtained from various plating baths. A novel parameter obtained by multiplying modeling power by squared least-squares regression coefficient proves to be a useful tool for determining the optimal part of a voltammogram taken for calibration calculations. Several methods were demonstrated for outlier detection within the training set to be applied prior regression calculation. The techniques for determining the optimal number of factors for regression calculation were presented. These techniques, while iteratively coupled with numerous discussed methods of outlier detection within the training set by regression calculation, can produce an outlier free training set to be used for final calibration calculations.

It has been demonstrated that multivariate regression methods can create a robust calibration model based on data that are virtually useless for univariate regression methods. *It has been discovered that by combining into one data file data obtained using different techniques one may create a more accurate calibration model than that calculated for any single technique. The novel method is based on “gluing” parts of different voltammograms (but obtained for the same solution) prior decomposition and multivariate regression calculation.* Powerful chemometric regression techniques provide robust, multivariate calibration that can be reliably transferred from the primary instrument to secondary instruments.

Data sets passing outlier detection tests are being used for regression calculations. The information obtained about the concentration of deliberately added bath constituents can be used to maintain the desired constituent concentrations within limits in order to ensure optimal plating bath performance.

The Summary of Invention generally discloses numerous chemometric techniques that can be used in calibration of the measurements of constituents in plating baths. The Summary specifically discloses that “gluing” may be used prior to decomposition and multivariate regression to create a more accurate calibration model. Therefore, the specification discloses that the various processes of independent claims 1, 27, 53, and 54 and their respective dependent claims may include “gluing,” a method of information enhancement provided by the simultaneous decomposition of data from various independent electroanalytical responses obtained by using different electroanalytical techniques (see also page 44, last paragraph to page 45, first paragraph, and Table 7). As the Examiner has admitted that the prior art does not teach or suggest the “gluing” approach that Applicants have described and claimed, the subject claims are not obvious over any combination of Richards et al., Graham, Schneider and admitted art. Accordingly, Applicants respectfully request withdrawal of the 35 USC § 103(a) rejections and allowance of claims 1-3, 16, 17, 19-21, 24, 27-30, 32-44 and 48-55.

IV. Conclusion:

In view of the foregoing remarks, pending claims 1-3, 16, 17, 19-24, 27-30, 32-44, and 48-55 should now be in condition for allowance, and an indication to that effect from the Examiner is respectfully requested.

FEE AUTHORIZATION

Please charge any fees due in connection with this filing to our Deposit Account
No. 19-0733.

Respectfully submitted,
/Ernest V. Linek/

Ernest V. Linek – Reg. No. 29,822
Attorney for Applicant